

# Maritime Working Group Meeting



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California Environmental Protection Agency



Air Resources Board

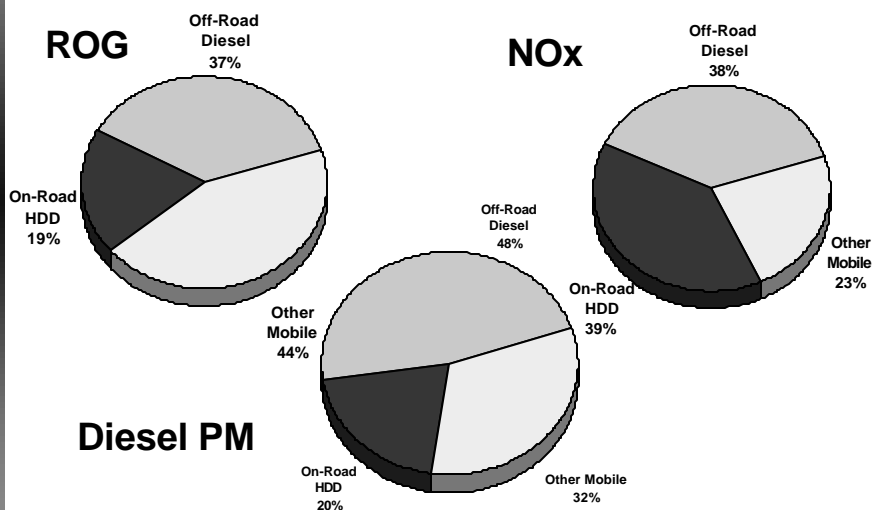
## What is Off-Road?



## Off-Road Programs

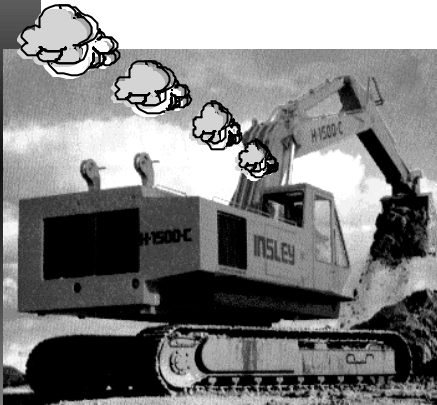
- Small Off-Road Engines
- Large Spark-Ignition Engines
- Compression-Ignition Engines
- Recreational Vehicles
- Recreational Marine
- Locomotive Engines

## Reducing Diesel Emissions is a Priority



Source: Statewide, Summer - 2010

# Compression-Ignition Engines



- Mainly Diesel Engines
- Harmonization with EPA in 2000
  - all HP included
  - 19 TPD ROG reduction in 2010
  - 91 TPD NOx in 2010
  - 9 TPD PM in 2010
- Clean Air Plan
  - PM aftertreatment
  - HC+NOx aftertreatment
  - Idle limiting strategies

## Potential Future Control Measures

- Aftertreatment and OBD for all CI engines
- Lower standards and OBD for LSI engines
- Catalyst retrofits for LSI
- Catalyst standards for NonHandHeld
- Lower standards for HandHeld engines
- Low sulfur diesel fuel
- Reduced Idling for CI engines
- Cleaner Locomotives